pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHCENTRAL REGIONAL OFFICE
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0009920**
Facility Type		APS ID	**780559**
Major / Minor	**Major**	Authorization ID	**926487**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Exelon Generation Co. LLC**	Facility Name	**Exelon Three Mile Island Nuclear Station**
Applicant Address	PO Box 480 Route 441 South	Facility Address	Route 441 South P O Box 480
	Middletown, PA 17057-0480		Middletown, PA 17057
Applicant Contact	Scott Cogley	Facility Contact	Scott Cogley
Applicant Phone	(717) 948-8881	Facility Phone	717-948-8881
Client ID	273620	Site ID	450833
SIC Code	4911	Municipality	Londonderry Township
SIC Description	Trans. & Utilities - Electric Services	County	Dauphin
Date Application Received	May 3, 2012	EPA Waived?	No
Date Application Accepted	May 8, 2012	If No, Reason	Major Facility
Purpose of Application	.Approval of chemical additive Nalco Nalclean 2568 PULV (sulfamic acid)		

Summary of Review

Exelon requested approval to use of Nalco Nalclean 2568 PULV to periodically clean and descale TMI Unit 1 radioactive liquid Miscellaneous Wastewater evaporator unit.

Recommend approval of additive by letter.

Approve	Return	Deny	Signatures	Date
X			Martin L. Ferry, P.E. / Environmental Engineer	October 17, 2013
			Jay E. Patel, P.E. / Environmental Engineer Manager	
			Maria D. Bebenek, P.E., Environmental Manager	

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	43
Latitude	40° 9' 8.00"	Longitude	76° 43' 40.00"
Quad Name	Middletown	Quad Code	1732
Wastewater Description:	Treated wastewater containing minimal levels of Nalco Nalclean 2568 PULV		
Receiving Waters	Unnamed Tributary of Susquehanna River	Stream Code	06685
NHD Com ID	56406043	RMI	59.15
Drainage Area	24,966	Yield (cfs/mi^2)	0.1328
Q_{7-10} Flow (cfs)	3,315.5	Q_{7-10} Basis	USGS 01570500
Elevation (ft)		Slope (ft/ft)	
Watershed No.	7-G	Chapter 93 Class.	WWF, MF
Existing Use	WWF, MF	Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake		Columbia Water Company	
PWS Waters	Susquehanna River	Flow at Intake (cfs)	3453
PWS RMI	42.83	Distance from Outfall (mi)	16.3

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	43
Latitude	40° 09' 08"	**Longitude**	76° 43' 40"

Wastewater Description: Discharge of treated water after cleaning Miscellaneous Wastewater evaporator unit

Exelon periodically cleans and descales TMI Unit 1 radioactive liquid Miscellaneous Wastewater evaporator unit. Exelon is requesting approval for use of Nalco Nalclean 2568 PULV (sulfamic acid) where 30 lbs (35 gallons) is added.

Sulfamic acid and the resulting salts from descaling will be concentrated in the evaporator bottoms during cleaning. The evaporator distillate is processed through a downstream evaporator condensate demineralizer. Exelon estimates that 99% of the sulfamic acid will remain in the evaporator bottoms for disposal as low level radioactive waste. The remaining 1% will carry-over into the distillate as a potential liquid effluent.

The distillate is collected in downstream tanks, sampled, and, if results are acceptable, released in batches generally not greater than 5,000 gallons at 30 gpm for mixing with cooling water for discharge from Main Station Discharge Outfall 001 to Susquehanna River.

The Chemical Additive Notification form lists a discharge flow of 81.2 MGD and a LTA of 19 MGD. The NPDES renewal application lists a maximum daily flow of 43 MGD and a monthly average of 19 MGD. 43 MGD will be used for the evaluation. The use of 81.2 MGD or 43 MGD does not significantly change the outcome because the larger discharge will result in a corresponding lower effluent concentration.

The discharge of Nalco Nalclean 2568 PULV will be evaluated at the worst case scenario of 100% discharge of chemical used where effluent concentration = lbs used/(43*8.34 = 0.0837 mg/l.

Nalco Nalclean 2568 PULV was modeled using Pentoxsd (printouts attached) resulting in a WQBEL of 207 ug/l compared to the effluent concentration of 83.7 ug/l. The actual effluent concentration is expected to be significantly lower and the chemical additive is approved for use.

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
6685	59.15	266.47	24966.00	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.1328	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
Exelon	PA000992	0	43	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
	(µg/L)	(µg/L)			(µg/L)					(µg/L)
Nalco Naclean 2568 PULV	83.7	0	0.5	0.5	0	0	0	0	1	0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
6685	57.80	262.10	25018.00	0.00000	0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Rch Width	Rch Depth	Rch Velocity	Rch Trav Time	Tributary Hard	Tributary pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(cfsm)	(cfs)	(cfs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.1328	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc	Trib Conc	Disc Daily CV	Disc Hourly CV	Steam Conc	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc
	(µg/L)	(µg/L)			(µg/L)					(µg/L)
Nalco Naclean 2568 PULV	0	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
07K	6685	SUSQUEHANNA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
59.150	3315.5	0	3315.5	66.521	0.0006	0.6777	2251.1	3321.8	2.217	0.0372	1000+
57.800	3322.4	0	3322.4	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
59.150	8870.5	0	8870.5	66.521	0.0006	1.0392	2251.1	2166.1	3.8202	0.0216	1000+
57.800	8886.6	0	8886.6	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07K	6685	SUSQUEHANNA RIVER

RMI	Name	Permit Number	Disc Flow (mgd)
59.15	Exelon	PA000992	43.0000

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
Nalco Naclean 2568 PULV	83.7	INPUT	130.585	201.745	CFC